

REMARKS

Allowable Subject Matter

Applicants gratefully acknowledge the Examiner's indication that claims 20-24 recite allowable subject matter. New independent claim 35 combines the features recited in claims 20-23 and new claim 36 corresponds to claim 24 rewritten in independent form.

Amendments

Page 9 of the specification is amended to correct an obvious typographical error.

Claim 1 is amended above to delete the phrases "in particular" and "characterized in that" and to delete superfluous language. In addition claim 1 is amended to expressly recite separating multibranched paraffins from the hydrocarbon feed and also to expressly recite fractionating the hydrocarbon feed. Further claim 1 recites that the hydrocarbon feed is fractionated into at least two distinct effluents, one of which is rich in multibranched paraffins. This feature was previously recited in claim 28. Thus, claim 1 now corresponds to original claim 28 rewritten in independent form (aside from the recitation of the optional feature). Claim 1 is further amended to recite that the effluent rich in multibranched paraffins has a high octane number, and the other effluent has a low octane number. See, e.g., page 11, lines 14-18.

Claim 2 is amended to replace "characterized in that" by "wherein." Claim 28 is amended to recite that the effluent contains aromatic and naphthenic compounds. Claim 28 previously recited that the presence of these compounds was optional. Claim 29 is amended to be consistent with the language of claim 1 and is also amended to refer to the effluents as first, second and third effluents to facilitate distinguishing these effluents. Claims 30 and 31 are amended to delete the references to the separation unit and to instead refer to the step in which the hydrocarbon feed is brought into contact with the at least one zeolitic absorbent

As mentioned above new claim 35 corresponds to the combined recitations of claims 20-23 written in independent form and claim 36 corresponds to claim 24 written in independent form. New claim 37 recites that the feed has a paraffin content of between 30 and 80% by weight. See, e.g., the first full paragraph on page 7 of the specification. Claim 38 recites that the zeolite is selected from a specific group of zeolites. See, e.g., the third paragraph on page 9 of the specification. New claim 39 is similar to claim 1, but recites that there are at least two distinct effluents, the first effluent having a high octane number and the second effluent having a lower octane number. The effluent with the lower octane number is

recycled to a hydroisomerisation unit. See, e.g., the second full paragraph on page 11 of the specification.

Rejection Under 35 USC §112, second paragraph

Claims 1, 2 and 19-34 are rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. This rejection is respectfully traversed.

One of ordinary skill in the art upon reading the original version of claim 1 would recognize the concept of separating multibranched paraffins from a hydrocarbon feed especially when the claims are read in light of the specification. In any event, as noted above, claim 1 is amended to expressly recite that, by contact with the absorbent, multibranched paraffins are separated from the hydrocarbon feed. In addition, claim 1 is amended to expressly recite the concept of fractionating the hydrocarbon feed. This concept is also readily understood by one of ordinary skill in the art upon reading the original claim 1, especially in light of the specification. In addition, claim 1 is amended to delete the phrase "in particular" and claims 30 and 31 are amended to eliminate references to the separation unit.

In view of the above remarks, it is respectfully submitted that Applicants' claims are sufficiently definite to one of ordinary skill in the art. Withdrawal of the rejection under 35 U.S.C. §112, second paragraph, is respectfully requested.

Rejections Under 35 USC §102(b) and §103

Claims 1, 2, 19 and 28-34 are rejected as allegedly being anticipated in view of Zinnen et al. (U.S. 5,744,684). This rejection is respectfully traversed. In addition, claims 25-27 are rejected as allegedly being obvious in view of Zinnen et al. (U.S. 5,744,684). This rejection is also respectfully traversed.

U.S. '684 discloses a process for isomerizing a mixture of alkanes. The mixture contains pentanes and at least one alkane having 6 to about 8 carbon atoms and no more than 1 methyl-branch. See, e.g., column 2, lines 36-39. Referring to figure 1, in the process the feed is introduced into a first separation zone 20 where it is subjected to fractional distillation and the pentanes of the feed are separated from the hexanes, heptanes and octanes. The pentanes are removed via line 3 and introduce them to a second separation zone 22. In the second separation zone, branched pentanes are separated from n-pentane by fractional distillation. The branched pentanes are removed via line 5 and the n-pentanes are removed via line 4.

The hexanes, heptanes and octanes removed from the first separation zone via line 2 are delivered to an isomerization zone 21. The n-pentane stream which is removed from the second separation zone via line 4 is also introduced into this isomerization zone. The n-pentane is used as both a desorbent and a reactant in the isomerization zone 21. Hydrogen is also introduced into the isomerization zone 21 via line 14. The isomerization zone 21 contains a simulated moving bed chromatographic reactor in which an isomerization reaction is performed while at the same time products and reactants are separated. To perform these two functions, the simulated moving bed contains a mixture of solids, at least one of which is an isomerization catalyst and another of which is an absorbent. See, e.g., column 4, lines 36-66.

From the isomerization zone 21 there is discharged both a raffinate stream and an extract stream via lines 6 and 7, respectively. The raffinate is described as containing n-pentane desorbent and isomerized products whereas the extract is characterized as containing mainly undesired by products, n-pentane desorbent, and branched pentanes. See column 7, lines 33-67.

Table 1 of US '684 (see columns 11-12) describes the content of the extract and raffinate streams. Extract stream 7 contains no multibranched paraffins. On the other hand, while raffinate stream 6 does contain some multibranched paraffins, this stream is predominately made up of mono-branched paraffins. As a result, raffinate 6 does not have a high octane number.

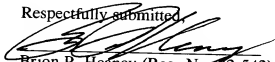
Thus, Zinnen et al. do not describe or suggest a process which produces an effluent rich in multibranched paraffins. Furthermore, due to the predominance of the mono-branched paraffins, extract stream does not have a high octane number. Since the Zinnen et al. process involves using n-pentanes as both a desorbent and reactant, there is no suggestion of producing an extract stream 6 from the hydroisomerization zone 21 which would be rich in multibranched paraffins and/or has a high octane number.

In view of the above remarks, it is respectfully submitted that Zinnen et al. fails to anticipate and/or render obvious applicants' claimed invention. Withdrawal of the rejections under 35 USC §102(b) and §103 is respectfully requested.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version With Markings To Show Changes Made".

Respectfully submitted,



Brion P. Heaney (Reg. No. 32,542)
Attorney for Applicants

MILLEN, WHITE, ZELANO & BRANIGAN, P. C.
2200 Clarendon Boulevard, Suite 1400
Arlington, Virginia 22201
(703)812-5308
Internet address: heaney@mwzb.com

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Version With Markings To Show Changes Made

IN THE SPECIFICATION

At page 9, lines 9-15, please delete the paragraph and replace it with the following paragraph:

-- Advantageously, the zeolitic adsorbents used in the process of the invention are zeolites with structure type EUO, NES and MWW. Examples of zeolites included in this family are EU-1 zeolites (European patent EP-A-0 042 226), ZSM-50 (US-A-4 640 829), TPZ-3 (US-A-4 695 667), NU-87 (EP-A-0 378 916), SSZ-37 (US-A-5 254 514), MCM-22, ERB-1 (EP-A-0 293 032), ITQ-1 (US-A-6 004 941), PSH-3 (US-A-4 439 409), and SSZ-25 (EP-A-0 231 860). NU-85 zeolites (US-A-5 385 718 and EP-A-0 462 745) and NU-86 zeolites (EP-A-0 463 768), the structure type of which have not been determined, are also advantageously used in the process of the invention.--

IN THE CLAIMS

Please amend the claims as follows:

--1. (Amended) A process for separating multibranched paraffins comprised in a hydrocarbon feed comprising hydrocarbons containing 5 to 8 carbon atoms per molecule, wherein said hydrocarbon feed contains in particular linear, monobranched and multibranched paraffins, comprising:

bringing said hydrocarbon feed into contact with at least one zeolitic adsorbent whereby multibranched paraffins are separated from said hydrocarbon feed, and fractionating said hydrocarbon feed into at least two distinct effluents, a first effluent which is rich in multibranched paraffins and has a high octane number, and a second effluent which has a low octane number, characterized in that

said adsorbent having has at least two types of channels, principal channels with an opening defined by a ring of 10 oxygen atoms (~~10 MR~~) and secondary channels with an opening defined by a ring of at least 12 oxygen atoms (~~at least 12 MR~~), said secondary channels only being accessible to ~~the said hydrocarbon feed to be separated~~ via said principal channels.

2. (Amended) A separation process according to claim 1, ~~wherein characterized~~
~~in that~~ said adsorbent contains silicon and at least one element T selected from the group
formed by aluminium, iron, gallium and boron, the Si/T mole ratio being at least 10.

28. (Amended) A separation process according to claim 1, wherein said
comprising fractionating said hydrocarbon feed into at least two distinct effluents, at least one
of which is first effluent rich in multibranched paraffins further contains and optionally in
aromatic and naphthenic compounds.

29. (Amended) A separation process according to claim 1, wherein said
comprising fractionating of said hydrocarbon feed produces into three distinct effluents, said
first an effluent that is rich in linear paraffins, an effluent that is rich in monobranched
paraffins, and an effluent which that is rich in multibranched paraffins and optionally in
aromatic and naphthenic compounds, said second effluent which is rich in linear paraffins,
and a third effluent which is rich in monobranched paraffins.

30. (Amended) A process according to claim 1, wherein, before said hydrocarbon
feed is brought into contact with said at least one zeolitic adsorbent, at least one light fraction is
separated from said hydrocarbon feed by distillation, upstream or downstream of the separation
unit or, after said hydrocarbon feed is brought into contact with said at least one zeolitic
adsorbent, at least one light fraction is separated from an effluent by distillation.

31. (Amended) A process according to claim 1, wherein the feed contains a C5
cut, and before said hydrocarbon feed is brought into contact with said at least one zeolitic
adsorbent, said hydrocarbon feed is sent to at least one deisopentaniser and/or at least one
depentaniser is/are located upstream or downstream of the separation unit, or after said
hydrocarbon feed is brought into contact with said at least one zeolitic adsorbent, an effluent
is sent to at least one deisopentaniser and/or at least one depentaniser.--